REMARKS

As an initial matter, referring to United States patent application no. 09/264,991 on which the present continuing patent application is based, we wish to bring to the Commissioner's attention that the correct filing date for US 09/264,991 is January 4, 1999, not March 17, 1999 as indicated in communications Applicant received from the USPTO during the examination phase for US 09/264,991. Enclosed with the present Request for Continuing Application under 37 CFR 1.53(b) is a copy of the September 8, 1999 decision by the Office of Petitions to grant Applicant's request to process US 09/264,991 as a continuation application under 37 CFR § 1.53(b) with a filing date of January 4, 1999. Accordingly, Applicant has amended the present specification to include the correct January 4, 1999 filing date in the new sentence inserted before the first line of the specification.

Applicant has canceled the original claims 1-25 as filed on January 4, 1999 in US 09/264,991, and has added new claims 26-57 to better recite what Applicant believes is the invention. Claim 26 recites a structural section comprising an inboard extending flange in combination with a stiffener member extending downward at an oblique angle the flange edge, along with reciting a distance (D2) between longitudinal clamping surfaces that is less than a distance (D3) between the stiffener members. The inboard extending flange is shown as reference number (17), and the oblique stiffener members are shown as reference numbers (22 and 23, Figures 3 and 4). In addition, claim 29 recites the further limitation whereby the stiffener member is a curvilinear stiffener member (24, Figure 5) extending downward from the inboard extending flange. The curvilinear stiffener member includes a planar leg parallel to and spaced apart from the flange (17) to provide a gap therebetween. Applicant believes the recited claim limitations are not anticipated by either Pedreschi or Sedlmeier, and as such, Applicant's claimed structural section, with the inboard extending flange and stiffening member, is not obvious to a person of ordinary skill in the art because taken separately, or together, Pedreschi and Sedlmeier fail to teach or even suggest either Applicant's inboard extending flange and oblique stiffener member combination, or Applicant's inboard extending flange and curvilinear stiffener member combination with a gap therebetween. Test data show the inboard extending flange and stiffener member combinations of the present invention are <u>up to about 20% more efficient as compared to the Pedreschi section</u>, and other test data show that Applicant's inboard extending flange and curvilinear stiffener member

combination is <u>more than two times more efficient than the hemmed flange taught by Sedlmeier</u>. Such improved results are believed to prevail over arguments that Applicant's structural section is obvious in view of Pedreschi and Sedlmeier. If Applicants design were obvious Pedreschi and Sedlmeier would have improved the performance of their sections by utilizing an inward extending flange and stiffener member combination similar to Applicant's invention. The art is silent with respect to such inboard stiffener treatment along the edge of a flange. Applicant provides the following, more detailed remarks, as further support for the patentable features of the present invention.

Claims 47 and 51 recite a roof truss having improved top and bottom roof truss chords, and a plurality of web members extending between the improved chords. The prior art fails to teach or suggest Applicant's improved roof truss chords that include a flange in combination with an oblique angled stiffener or a curvilinear stiffener to improve the strength or efficiency of a roof truss, as described in better detail below), along with the stiffeners being spaced apart at a distance (D3) that is greater than a distance (D2) between longitudinal clamping surfaces. Applicant's flange and oblique angled stiffener arrangement improve roof truss efficiency by about 20% over past teaching, for example Pedreschi and Garris, and Applicant's flange and curvilinear stiffener arrangement improve roof truss efficiency more than two times over past teaching, for example Sedlmeier.

It should be understood that, in lightweight frame construction, it is very important to manufacture structural sections so that they provide optimum strength or efficiency. This is necessary because thin gauge steel sheet materials are used to form such structural sections. For example, steel framing sections are typically manufactured with 20-22 gauge (0.0344", and 0.0297") thick steel sheet. Any change in the structural shape that improves strength or efficiency of such thin gauge sections is a step forward in the art of steel framing. Therefore, formed edge treatments, stiffeners, flanges and the like that improve strength, are not simply a matter of obvious design choice as stated by the Examiner in Applicant's earlier patent application US 09/264,991. Quite to the contrary, Applicant's inboard extending flange and stiffener member combination is carefully developed and tested to provide improved strength over the thin gauge structural sections used in the past. For instance, Applicant's present claimed structural section, with the improved inboard extending flange and stiffener member combination, provides improved

Table A

	With Folded Ends	W/O Folded Ends	Ratio	Increase
Strip Width (in)	7.4181	7.7068	1.039	3.89%
Ta (k)-Axial Tension	7.9390	8.3653	1.054	5.37%
Pao (k)-Axial Compression	6.5136	6.7911	1.043	4.26%
Maxo (k-in) - Positive Moment	3.2433	3.6201	1.116	11.62%
Maxo (k-in)-Negative Moment	3.9807	4.9869	1.253	25.28%

efficiency as compared to the same section without the flange and stiffener. Such a section without the inboard extending flange and stiffener combination is taught by Pedreschi. Refer to the following Table A, the first row, labeled "Strip Width" is the width of a steel blank or a coil of steel used to form a particular shape. If stiffener members are added at the flange ends, there is an increase in material along the sheet width. In the present example, about 4% more material is used to form a shape having folded terminal ends as compared to material used to form Pedreschi's shape without stiffener members.

The next two rows, labeled "Axial Tension and Axial Compression," are substantially unaffected by this material increase. In other words, tension and compression properties are increased by only about 4-5% in a shape having stiffener members added to the cantilever flange ends. Considering about 4% more material was added to form the flange ends, there is little or no improvement in axial tension or compression. On the other hand, referring to the improvement in positive and negative bending, shown in the last two rows of Table A, <u>there is an unexpected and significant improvement in the bending moment (strength). Table A lists an 11.62% improvement in the positive bending moment</u>. In order to get a true measurement of this improved efficiency, under the column labeled "Ratio," it is necessary to divide the positive moment (1.116) by the strip width (1.039). For instance, even though the table shows an 11.62% increase in positive moment capacity, only about 4% in material was added. We need to recalculate the increase to remove any effect the added material has on the improved bending capacity. In doing so, we discover the true measurement of efficiency for the claimed section is about 7.4% improvement in positive moment capacity (1.116/1.039 = 1.074). Likewise, if we consider the effect

of the added material on the negative moment capacity (25.28%), we discover the efficiency of the claimed section is dramatically increased, by about a 20.60% increase in the negative moment capacity (1.253/1.039 = 1.206). In lightweight framing, a 5% improvement in section efficiency or strength is considered significant. The results in the present application show both a dramatic and unexpected improvement in section properties, and such unexpected results demonstrate that the structure as claimed is not obvious in view of Pedreschi.

Calculations for determining section properties with and without terminal ends are shown in the two enclosed calculation sheets labeled Exhibit A, for a structural section without stiffening members attached to the flange ends, and Exhibit B, for a structural section having stiffening members attached to the flange ends. The calculations are based on a section where the width of web (11) is equal to the length of legs (12a and 12b), basically a square section. Accordingly, as the leg length is increased, as shown in Figure 1 of the present patent drawings, where the length of legs (12a and 12b) is greater than the width of web (11), the section properties will be further improved over Pedreschi. This is claimed in amended claim 32 as compared to the more or less square section disclosed by Pedreschi.

A further point for consideration is a safety issue. As disclosed in British 2,222,188, Pedreschi's flanges (20A and 20B) are considered hazardous by workers in that the sharp edges of the flange may cut hands during shipping and/or framing operations. Applicant's folded terminal ends eliminate or reduce such hazards.

Additionally, in stiffened flange ends, and in particular, in Applicant's stiffened inboard extending flange ends (22, 23, and 24), spring back along the stiffened portion and the resulting interference problems shown in prior art drawing Figures 6-10, is eliminated. Applicant has discovered that by providing an oblique stiffener member (22 or 23) to the inboard extending flange (17), or by providing a curvilinear stiffener member (24) having a leg parallel to and spaced apart from the inboard extending flange (17), he is able to eliminate such spring back and interference problems, and he also improves the efficiency of his structural section by up to about 20% as compared to the teaching of the prior art. On the other hand, even though Pedreschi provides spaced distances similar to Applicant's (D2 and D3), the absence of stiffener members along his inward extending flanges (20A and 20B) will continue to cause the spring back and interference problems overcome by Applicant's present invention.

Referring specifically to the Sedlmeier reference, Sedlmeier teaches a hemmed

inboard extending flange (cross members 5a, 5b). Referring to column 4, lines 54-57, the reference teaches "...doubling the free end sections of the side walls over on themselves." A hemmed edge is a cosmetic treatment, not a stiffener; it does not add strength to a structural section. Therefore, Sedlmeier fails to teach a structural section with an inboard extending flange and stiffener member as claimed by applicant. Support for this argument is found on page 10 of Applicants specification in the paragraph labeled "Stub Column Test Method...," and also in Table A on page 11. As clearly shown by the listed data and text, the claimed curvilinear stiffener member, called a "simple "U" shape" on page 10, is more than twice as strong as the hemmed inboard extending flange taught by Sedlmeier. Such unexpected improvement in strength over prior teaching is not simply a matter of design choice. Additionally, because a hemmed edge is not a stiffener, and because such hemmed edges provide little or no added strength to a structural section, the Sedlmeier section will continue to have the spring back and interference problems overcome by Applicant's present invention.

To summarize, the various structural sections shown in the art of record, and in particular, the disclosures by Pedreschi and Sedlmeier, fail to recognize the improvements provided by Applicant's particular stiffening members along the inboard extending flange ends. During the work and development of their sections, both Pedreschi and Sedlmeier had every opportunity to provide flange stiffener members similar to Applicant's claimed section. They failed to recognize that such flange and stiffener members would strengthen and/or improve the efficiency of their structural sections, and their disclosures fail to teach or even suggest using such stiffener members to improve the efficiency of their respective sections. As a result, both Pedreschi's and Sedlmeier's structural sections are inferior, less strong and less efficient when compared to Applicant's claimed shape. Accordingly, whether taken separately or together, Pedreschi and Sedlmeier fail to show that Applicant's claimed structural section is obvious to one skilled in the art. Finally, the art of record is silent with respect to Applicant's claimed structural section having an improved inward extending flange and particular stiffener member combination. Therefore, Applicant believes there is no prima facie case for an obviousness rejection. Applicant believes that no new matter has been inserted into the present application by way of Applicant's preliminary amendments to the claims. Applicant respectfully requests examination of the above-amended claims 26-46 before issuance of a first Office

action in the present application.

The Assistant Commissioner for Patents is hereby authorized to charge claim fees of $996 plus a $40 assignment recordation fee to Deposit Account No. 02-2225 as indicated on the attached Fee Transmittal

Respectfully Submitted,

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